

Social Commerce Design: A Framework and Application

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Abstract

Social commerce is a new business model of e-commerce, which utilizes of Web 2.0 technologies and social media to support social-related exchange activities. While its popularity, being a subset of e-commerce, has been increasing tremendously since its introduction in 2005, there exists a general paucity of research on its framework and its applications' effectiveness, especially in areas beyond the common social commerce practices. This study develops a comprehensive social commerce framework that has four key components: customer, merchant, platform and context. Then the study applies the cross-case synthesis technique to analyze the usability and generalizability of the framework by applying it to social commerce of two (one small and the other global) successful companies. We use the negative case analysis approach to assess the importance of the new component *context* by comparing a social commerce failure case with the two successful companies. Finally, we introduce a set of metrics for social commerce design. The proposed framework and its metrics are used to guide the design and evaluation of social commerce. This study makes a contribution to the social commerce literature in proposing a new design framework and to practice in providing insights for effective strategies of the online social business.

Keywords: Social commerce, E-commerce, Social media, Web 2.0, Framework, Cross-case synthesis, Negative case analysis

1 Introduction

The birth of social commerce (s-commerce) happened with the evolution of e-commerce and the widespread use of social media. Introduced by Yahoo in 2005, it quickly became a means for adding value to commercial services through the use of customer engagement by major web companies, such as Amazon, Groupon and eBay [33]. According to a 2011 survey by Forrester Research of 5,000 online shoppers, most purchases were made based on recommendations obtained through the web community and social media channels [76]. The study found that shoppers' buying behavior was significantly influenced by the following sources: customer reviews (71%), community forums (45%), Facebook wall (31%), videos (30%), and Facebook fan page (25%). By 2019, enterprise social networks are expected to generate more than 3 billion U.S. dollars in revenue worldwide (Site 1).

Despite the rapid growth and increasing influence of s-commerce, academic research on this topic is still at its early stage with a limited number of empirical studies [33] and less than satisfactory level of contribution to practitioners [4] regarding how to effectively manage s-commerce (its modeling, design framework, and applications). Hence, we develop a framework, which could be useful to both academics and practicing managers for designing s-commerce and assessing its performance. The primary research question of this study is: what components need to be included in an s-commerce design framework? Based on the integration of previous studies of s-commerce and the existing knowledge of online businesses, we develop a new framework and a set of metrics/principles for s-commerce design.

The proposed framework includes four key elements in the design and evaluation of a company's s-commerce: customer, merchant, platform, and context. Customer and Merchant are the actors of s-commerce and characterized by personal background and organizational factors respectively. Customer and Merchant communicate, share, and collaborate through the Platform, which involves four entities: Activities, Information, Management and Technology. Finally, s-commerce takes place in a Context, which is characterized by Spatial, Time, and macroscopic dimensions (Economic, Social, Environmental, and Legal/Political, factors).

To assess the effectiveness of our proposed s-commerce framework, we applied the cross-case synthesis technique [74] through a comparative analysis of two companies that are successful in s-commerce, Cat Emporium and Nike. We chose these two firms as a representative at each end of the enterprise size spectrum: Cat Emporium as a small-medium enterprise (SME) and Nike as a large global firm. We also used negative case analysis to assess the importance of a new component *Context* by examining the negative case of Smucker's Facebook scandal vis-a-vis the two successful companies (Cat café and Nike). Through this comparative analysis, we aim to prove the general applicability of our proposed framework.

The rest of the paper is organized as follows. Section 2 presents a literature review of s-commerce including definitions and frameworks. In Section 3, we develop a new framework with four components: customer, merchant, platform and context. In Section 4, the framework is applied to evaluate its performance via social websites and networks of three companies, Cat Emporium and Nike through the cross-case synthesis technique, as well as Smucker's Facebook scandal through the negative case analysis approach. Section 5 discusses metrics that enable managers to successfully navigate their s-commerce space, implications, limitations and future research needs. Section 6 presents the conclusions.

2 Literature Review

The rapid increase in popularity of social media and Web 2.0 has given rise to s-commerce applications by firms of all sizes. This development has also drawn academics' attention and interest to analyze the characteristics, use, and success factors of s-commerce to help practitioners find ways to leverage it for improved business performance [60].

2.1 S-Commerce Definitions

Since s-commerce is still relatively new, the term has not always been used with consistency [43]. Some use social commerce as social media marketing or social shopping, while others refer to it as a short form of s-commerce [15]. There is a vast variety of definitions, which comes from the fact that s-commerce involves multiple disciplines and therefore has been looked from different perspectives. Examples of these different definitions of s-commerce found in the literature are provided in Appendix A.

Overall, we can group these definitions of s-commerce into three main streams: (1) s-commerce is a subset of e-commerce, where social media is used for commercial transactions [13], [16], [30], [36], [46], [47], [52]; (2) s-commerce is simply a (computer) platform, an online mediated application that combines social media and Web 2.0 [17], [31]; and (3) the fusion of the previous two: s-commerce is a subset of e-commerce that uses Web 2.0 and social media not merely for commerce/purchases but to enable and engage users in the entire life cycle of a product/service from pre-developing a product (designing) to the final step of post-product (disposing) [5], [73]. In this research, we used the last definition of s-commerce.

2.2 S-Commerce Framework

Several researchers have explored s-commerce from different perspectives and therefore, frameworks. Thus, Leitner and Grechenig constructed their framework with three main entities: consumer, merchant and product [40]. Turban et al. introduced s-commerce rooted in four essentials: marketing, social behavior (sociology), the Internet (web), and e-commerce [69]. A year later Liang and Turban observed s-commerce from six perspectives: research themes, research methods, underlying theories, outcomes, social media, and commercial activities (the last two items being fundamental elements) [43]. They divided s-commerce activities into four main categories: social media network marketing; enterprise social marketing; technology, support and tools; and management and organization. Zhang and Benjamin constructed the Information Model (I-Model), which has four components: people, information, technology, and organizational/society [78]. In a later study, Wang and Zhang used a similar four-component (people, information, technology, and management) in the I-Model framework, where they treated the organization/society component as general *management* [71]. Zhou et al. proposed an s-commerce framework with four key components: business, technology, people, and information [79]. Looking for the design of s-commerce perspective, Huang and Benyoucef proposed a conceptual framework with four layers: individual, community, conversation, and commerce. They proposed dividing the design of s-commerce into the design of common features (common for all layers of s-commerce), and exclusive features for each layer [31]. Wu et al. combined this framework with an information model to come up with a new framework that added a management layer to the existing four layers [72].

Based on the described research above on s-commerce frameworks, we integrated four components in our s-commerce framework: Customer, Merchant, Platform, and Context. The first three components have been identified by previous studies [40], [43], [71]-[72], [78]-[79]. However, the fourth component, Context, has not been considered by previous s-commerce studies as a contextual (such as legal/political, economic, social, and environmental factors, as well as spatial and time dimensions) item. The increased pervasiveness of s-commerce in people's lives has motivated researchers to begin focusing on some of these macroscopic facets of s-commerce. For instance, Animesh et al. [3] pointed out that the spatial (density and stability) dimension significantly influences s-commerce participants' virtual experience, as does time constraint, important for group-buying and co-browsing/shopping. Thus, we added Context as the fourth component in our s-commerce framework. These four components described above should be effectively integrated into the framework.

3 The Proposed Framework for S-commerce

In our proposed framework (see Figure 1), Customer and Merchant [40] represent the basic elements identified by previous studies [43], [71], [78]-[79]. Platform as the linkage component contains four entities: Activities [43], Information [71], [78]-[79], Management [71]-[72] and Technology [71], [78]-[79]. Context is a new component we introduce for the first time in the s-commerce framework. In our framework, the four components interact with each other as a separate entity: Customer and Merchant use Platform to keep contacting under the circumstance of Context. Thus, solid lines are shown as the boundaries that separate our four components.

The relationships among the four components in the proposed framework are as follows: (1) Customer and (2) Merchant are the driving force for information sharing, business development, and technology advancement. Customer and Merchant, the enablers of s-commerce, are respectively characterized by personal background (such as Physical and Psychological factors) and organizational factors (such as Reputation, Size, and Products/Services). (3) Platform, the linkage component, through which Customer and Merchant communicate, share, and collaborate through four entities: Activities, Information, Management and Technology. (4) Context characterizes the Spatial dimension, Time dimension, and macroscopic dimensions (Economic, Social, Environmental, and Legal/Political factors). Below the details of all elements of the framework are discussed.

Customer, the customer is the centric component of s-commerce. In the s-commerce environment, customers communicate and collaborate with each other in a social way. That means, through social media, people interact with others, possibly making friends online, discuss products and services, and receive suggestions and provide recommendations from and to other individuals [40]. Thus, besides social interactions, the goal of customers in social media is to search, find, and possibly purchase appropriate products, services, and sharing their opinions about their experiences. The customer component incorporates Physical factors (gender, age, education, and experience) and Psychological factors (subjective norm, SNS addiction, SNS narcissism, hedonism, and utilitarianism), which all exert varying degrees of influence on customer behavior. Table 1 presents detailed design features related to psychological factors of the customer with references.

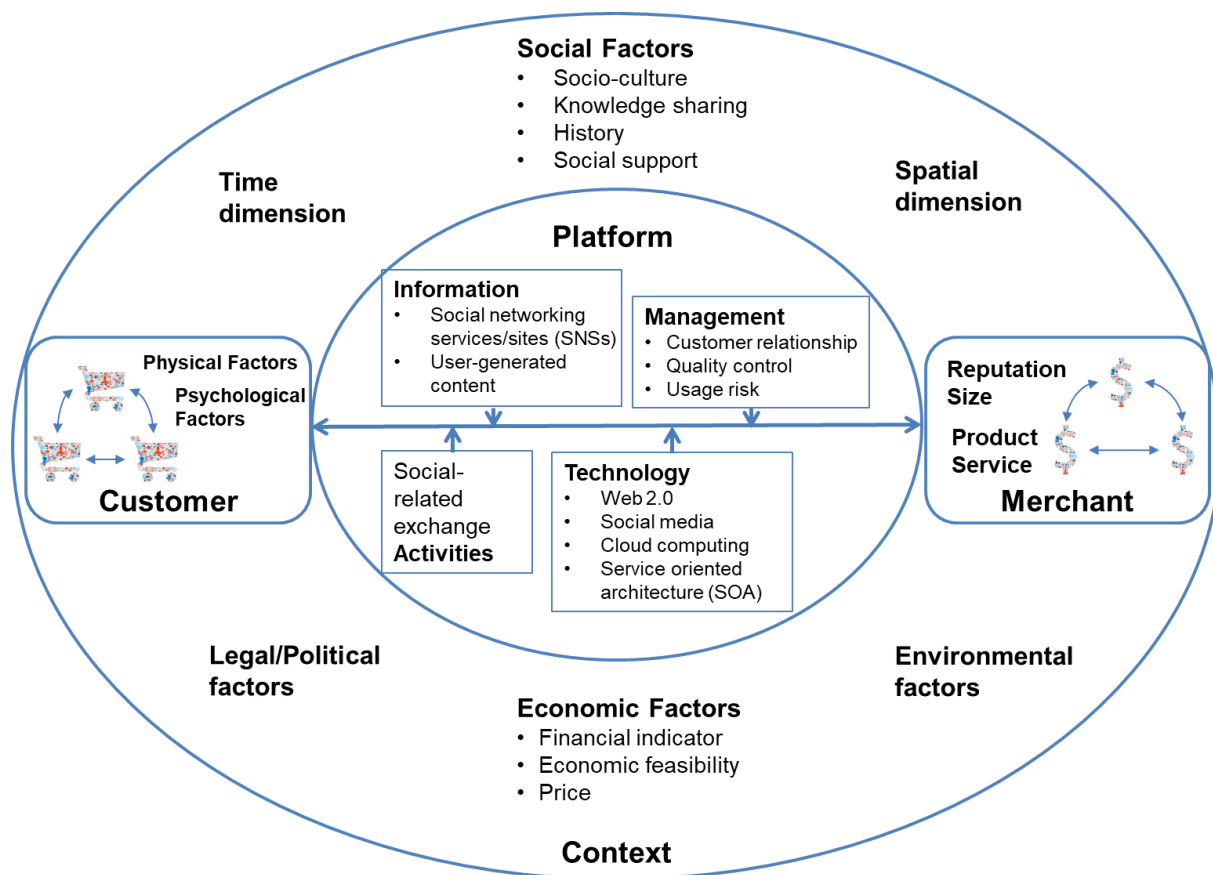


Figure 1: S-commerce Framework

Table 1: Psychological factors of the customer component

Design components	Design features	Explanations	References
Customer: psychological factors	Subjective norm	The perceived social pressure that aids the decision of whether to perform the behavior or not	[6], [28], [58], [64]
	SNS addiction	An addictive consumption trait	[21], [65], [74]
	SNS narcissism	Self-existence and ideal images in the online space	[22], [45], [54]
	Hedonism	Seeking fun, play, enjoyment and experiences	[57], [79]
	Utilitarianism	To be goal-oriented and rational, as well as concerned with effectiveness and instrumental value	[57]

Merchant, in the s-commerce domain, merchants try to attract customers with promotional campaigns for brand awareness and to sell their products/services. Being the central transaction component of s-commerce, the merchant is responsible for distributing informative contents about its brands. The best and most effective way of doing this through social media is that the merchant immerses itself into the social community: employees actively participate, cooperate, and communicate constantly with customers just like any regular member of the community [40].

Platform, in our framework, the Platform consists of four entities: Activities, Information, Management and Technology.

Activities - In the s-commerce context, these are related to the various forms of user-generated contents (UGCs), support of customers' buying decisions by crowdsourcing, and transactions and relationships with customers (see Appendix B).

Information - This is the driving force in the s-commerce environment, as a considerable and rich amount of contents related to businesses, products/services, or simply social data is constantly produced and updated. Thus, this element is the most representative of the uniqueness of s-commerce [60]. The Information comes from social networking services/sites (SNSs), which have seen dramatic growth in popularity in the last decade, and user-generated contents (UGCs) (such as, blogs, wikis, discussion forums, posts, chats, tweets, podcasting, pins, digital images, video, audio files, and other forms of media created by users of an online system). Information is most useful for product marketing and development, brand awareness, and advice and assistance through discussion groups [37].

Technology - This entity refers to the information and communication technology (ICT) infrastructure and applications responsible for the feasibility of s-commerce [61]. In our framework, the Technology element includes social media and networks, Web 2.0, cloud computing, and service-oriented architecture (SOA). Cloud computing and SOA have been particularly important on the merchant's side, as they have helped expand their business in depth and in scope, beyond the social level with the agile and up-to-date infrastructure, platforms and services without ownership [48]. This flexibility allows merchants to respond to dynamic changes in the market and/or ICT technologies, and to focus on their core business, the various UGCs and other services required in s-commerce [4].

Management - This dimension involves strategies for multi-channeling co-creation and relevant platforms, critical for the purpose of collectively gathering information and selling through a variety of social shopping channels [61]. Effective management components that are essential for enhancing s-commerce collaboration over the Internet are summarized with related references in Table 2.

Table 2: Management component of s-commerce framework

Design components	Design features	Explanations	References
Management	<i>Customer relationship</i>		
	Customer engagement	Engaging customers with one another, with a company or a brand, such as likes, followers, pins etc.	[31]
	Member policy	Policies for intellectual property, security, privacy, and censorship	[6]
	<i>Quality control</i>		
	Service quality	Such as service interaction, service convenience and responsiveness	[1], [31], [39], [42]
	Technical quality	Such as aesthetic site quality, processing speed and usability	[6]
	Information quality	Such as information value and information filtering	[36], [62]
	Relationship quality	Such as commitment, satisfaction, trust and social presence	[25], [42]
	<i>Usage risk</i>	Such as financial risk, performance risk, privacy risk, social risk, and time (convenience) risk	[20]

Context, this element is a unique contribution of our framework as previous s-commerce studies either did not consider it at all or covered only limited aspect of it [3]. The contextual perspective covers a wide range of design features, as summarized in Table 3.

Table 3: Context component of s-commerce framework

Design components	Design features	Design sub-features
Context	Economic factors	Economic feasibility Financial indicator (Return on Investment, Revenues, Asserts, etc.) Price
	Social factors	Socio-culture History Knowledge sharing Social support
	Spatial dimension: Describes and compares patterns of where environmental factors are located.	
	Time dimension: A system dimension for maintaining a common time scale in an application.	
	Environmental factors: Natural elements that exist between organisms and any factor, abiotic or biotic, that influences living organisms.	
	Legal/Political factors: Activities having to do with government policy and its administration that have the potential to change or influence a business.	

We made a review of our design features with refinements as the final step in the design of the proposed framework. For example, for features that were found to belong to more than one component, we grouped them into one which is representative of these features, and deleted those features that were not suitable for s-commerce. Thus, Figure 1 represents our final proposed s-commerce design framework, which is used in the next section to evaluate s-commerce of two successful companies as well as one company that had s-commerce failure.

4 Application

In order to test the proposed framework for s-commerce and its specific design components, a cross-case synthesis technique was applied to examine different type and scale of organizations that use s-commerce in their business. The cross-case synthesis technique has important advantages for testing our framework. First, the complete cycle of case study research (e.g., design, selection, analysis and reporting) is examined. Second, we analyzed several cases, thus overcoming the common criticism of single-case studies - that they are somehow unique and idiosyncratic and therefore have limited value. Third, we would have comparative data, even if the cases were chosen to be confirmatory ones [75].

To demonstrate that our framework can be applied generally across different sizes and types of companies, we chose a small and medium-sized enterprise (SME) and a large global firm as comparison examples. According to Wikipedia, SMEs are businesses whose personnel numbers fall below certain limits [18]. Based on the European Commission's SME definition (which is provided with more detailed standards), we selected Lady Dinah's Cat Emporium (Site 2) as the representative sample of SMEs. Large enterprises are regional, national, or global organizations with more than 250 employees working in multiple locations or branch offices (Site 3). Nike (Site 4) is one of the world's biggest and best-known brands and therefore it comes as no surprise that it is the typical large enterprise.

4.1 Lady Dinah's Cat Emporium

Lady Dinah's Cat Emporium, *London's first cat café*, offers city-dwellers an opportunity to spend some time with feline acquaintances in a quiet, peaceful environment, in 90 minutes' paid sessions. A quick look at their booking calendar highlights the popularity of the Emporium: the appointment schedule is usually booked out. Figure 2 shows its website with various social media tools.



Figure 2: Lady Dinah's cat emporium's website

S-commerce has played a key role in Lady Dinah's success. For example, there are currently 10 cats in residence at the Emporium - each cat has its own Twitter handle. The 'cats' mainly tweet images of themselves, but the content here is not as important as the concept - the idea of giving each of the cats their own Twitter account has generated an enormous amount of attention for the business. The Emporium currently has close to 11 thousand followers on Instagram, more than 55,000 pages likes on Facebook, 19,000 on Twitter, and more than 207,000 followers on Pinterest (Site 5).

Through clever use of social platforms, and working with the cat trends of the web, Lady Dinah's Cat Emporium is one of the better examples of a business with a great understanding of its audience and how and where to connect with them in the s-commerce space.

4.2 Nike

Sports are an inherently social activity, so brands like Nike are a natural fit when it comes to the s-commerce era. Nike creates numerous opportunities for people to buy goods from its social channels. Figure 3 shows its website with diverse social media tools.

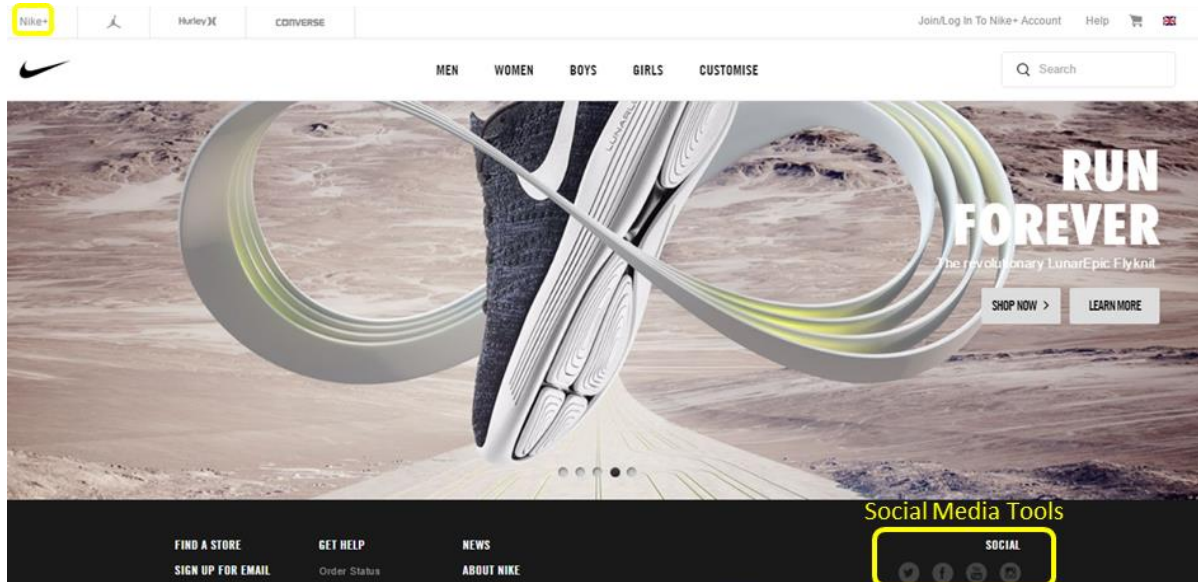


Figure 3: Nike's website

Like most global brands, Nike has separate Facebook pages for each of its product categories. This includes golf, snowboarding and FuelBand, as well as two football pages - one for American football and one for soccer (Site 6). Nike has also achieved some notable successes by using Twitter as a central tool in its marketing campaigns. It has most of its followers and subscribers on Facebook and Twitter. The world's biggest sportswear marketer by sales hails the role of platforms such as Instagram in its long-term efforts to spur sales outside of its partnerships with retailers. Not only does Nike do a good job of marketing itself using the main social channels, but it has also taken the time to establish its own unique social platform through Nike+.

4.3 A Cross-case Synthesis

Cross-case synthesis is applied specifically to the analysis of multiple cases. This technique starts with the creation of word tables that display the data from individual cases according to some uniform framework. Complementary word tables can go beyond the features of a single case and array a whole set of features on a case-by-case basis. Cross-case synthesis involves the examination of word tables for cross-case patterns that rely strongly on argumentative interpretation instead of numeric tallies [75]. To better understand the performance of the two companies in the s-commerce and to assess the effectiveness of the proposed framework as well, we did a side by side comparative analysis in terms of the four key components/criteria between Cat Emporium and Nike's social websites.

4.3.1 Customer

The emergence of s-commerce has brought substantial changes to customers. Hence, understanding customer behavior in the context of s-commerce has become critical for companies that aim to better influence customers and harness the power of their social ties [77]. Referring to Figure 1 and Table 1, we compared psychological and physical factors of the *Customer* design component in the s-commerce framework, as shown in Table 4.

After booking at the website of Lady Dinah's Cat Emporium, customers can sip tea and taste pastries while spending time with rescued cats at the café. By offering a wonderful opportunity for people who do not keep cats themselves to indulge in the pleasure of time spent in their company, the cat café has clearly built on the success of its opening in 2014 - when it received 20,000 bookings in its first two weeks (Site 7). Hitting 10,000 followers on Facebook in such a short period of time, the café will not need to advertise as long as customers are excited to post pictures of themselves to Facebook. Each cat at the Emporium has its own Twitter handle. For example, Wookie, their very own celebrity cat - has 800 Twitter followers. On Twitter, people are fond of discussing that Wookie needed exercise because he is extremely lazy and a little chubby. By affording different social channels at its website (over 70,000

fans and followers on social media), the cat café not only satisfies customers' psychological needs but also promotes brand awareness and online reputation.

Table 4: Customer design features of the two s-commerce websites

Customer	Cat Emporium	Nike
Psychological Factors		
Subjective norm	Influenced by others	Influenced by others
SNS addiction	An addictive consumption trait	An addictive consumption trait
SNS narcissism	NO	Self-existence and ideal images in the online space
Hedonism	Seeking fun, play, enjoyment and experiences	Seeking fun, play, enjoyment and experiences
Utilitarianism	NO	To be goal-oriented and rational
Physical Factors		
Education	Any	Any
Experience	Love cats but cannot keep cats themselves	Love sports
Gender	Any	Any
Age	12-year or older	Any

After launching its website in 1998, the company Nike began to experiment with ways to use the emerging social media to connect with customers (Site 8). To better grasp how customers interacted with brands on the Internet and through social media, Nike then worked with the media group Gawker and Internet video site YouTube. Instead of promoting the content about its products, Nike moved forward to be part of customers' daily lives. So, on Facebook and other social networks, Nike connects with the customers in the ways that customers are already connected with things they enjoy and are interested in. Therefore, content is created by customers more for their own broader life activities and interests [56].

4.3.2 Merchant

In the s-commerce domain, merchants explore alternative revenue models so as to make more profit by attracting potential buyers via customer interactions, which can be established in social networks and collaboration environments [15]. In Table 5, we compare merchant design features between the cat café and Nike.

Table 5: Merchant design features within the target s-commerce websites

Merchant design features	Lady Dinah's Cat Emporium	Nike
Reputation	Keep growing	High
Size	SME	Large global enterprise
Product	Cat themed products	Footwear, apparel, equipment and accessories related to sports
Service	A tea house provides a calm, soothing environment to help people to create a genuine bond with cats	NIKEiD, Nike+ apps

Lady Dinah's Cat Emporium is a unique start-up, which has a strong online reputation. It has its official online store, where customers will find a wide range of hand-picked cat themed products and gifts for cat lovers, including exclusives made lovingly by Lady Dinah herself, inspired by their very own family of felines. The cat café offers afternoon tea services to those who wish to do a fine dine with felines. However, customers need to make a booking at the café's website before trying to visit, as space fills up quickly.

Nike is considered a leader in athletic products with its long-standing global reputation. Nike sells an assortment of products, including shoes and apparel for sports activities like football (soccer), basketball, running, combat sports, tennis, American football, athletics, and golf. In addition, the social platform Nike+ offers communities, social interaction layers and apps that customers can download, track, share performance and get experts' training guidance.

4.3.3 Platform

In s-commerce environments, platforms have significant effects on the likelihood of social purchases. A platform is a place where customers can speak directly to the company and responds accordingly. The platform enables a better conversation with the focus on customer engagement, interaction, communication, customer services and relationship building. Table 6 lists the Platform design features as they apply/not apply to the two s-commerce websites.

Activities, Lady Dinah's Cat Emporium raised over £109,000 in an Indiegogo crowdfunding campaign to support its opening (Site 9). Then the Emporium started all social channels at once including Facebook, Twitter, Google +,

Pinterest, Blog, Instagram, and its own website. Facebook and Pinterest emerged as the natural places to tell the café's story, so they were stronger platforms during the startup phase. After running 11 Twitter accounts (one per kitty), Twitter was a great mechanism to share quick updates and notes about seat availability. Combined with an impressive use of Instagram to show off photos of the cats, the Emporium has developed a dedicated cult of cat lovers talking about the brand (electronic word-of-mouth) and vying for a chance to visit. Each social stream has served them differently in different ways. But as an SME, the café has not ventured into advanced social activities such as L-commerce, M-commerce and social application that need significant amounts of funds and technology support.

Nike, as an s-commerce giant, is involved in almost every type of social activity. For example, customer co-creation has received an increasing amount of attention in the past few years. Through NikeiD store and mobile app, customers can create their own unique designs for sports gear. Customers can even design their whole team's kit. Company employees can also wear their own design to create massive social referrals (Site 10). In addition, customers can save their favorite Nike items or customized NIKEiD designs into their Wish List. Saving to Wish List allows customers to purchase these items later or email the list to their friends and family. However, Nike is not involved in group-buying.

Table 6: Platform design features in the two s-commerce websites

Design components	Design features	Cat café	Nike
Social-related exchange Activities	Recommendation and referrals	√	√
	Rating and reviews	√	√
	Forums and communities	√	√
	Social ads and applications		√
	Electronic word-of-mouth	√	√
	Crowdsourcing/Crowdfunding	√	√
	Co-browsing/shopping/creation		√
	Group-buying		
	Tagging		√
	Social curation	√	√
	M-commerce and L-commerce		√
	Wish lists		√
	Information	Social networking services/sites (SNSs)	√
User-generated content		√	√
Technology	Web 2.0	√	√
	Social media	√	√
	Cloud computing		√
	Service-oriented architecture (SOA)		√
Management	Customer relationship	√	√
	Quality control	√	√
	Usage risk	√	√

Information, Clearly the cat café knows how to keep the social ball of yarn rolling. In its social networking sites, cat lovers are enthusiastic about sharing information through different ways: chatting on forums, reviewing on social communities, posting on blogs, sharing digital images and videos on websites, etc.

As one of the world's biggest sports brands, Nike keeps on leveraging user-generated content (UGC), achieving a great deal of brand exposure from its excellent digital campaigns, particularly through social networking sites. For example, a campaign called Nike Cross Nationals, which is a race for high school students, is organized every year. Nike launched the RunNXN feature, wherein the company fixed RFID chips on each running shoe, so that the number of miles can be recorded. Also, live video stream (4 camera angles) was captured and race statistics were shared as a tagged Facebook feed of the runners. This is a significant example of UGC that also creates a huge information traffic (Comment Rate: 1 every 2.6 seconds; Users Time spent with the app: 1.5 million minutes; Site visits: 36,000+) (Site 11).

Technology, Web 2.0 and social media offer customers a user-friendly interface with rich media and clear links for navigation, as a direct marketing tool to support customers' decision-making processes and buying behavior [11]. Both Lady Dinah's Cat Emporium and Nike use Web 2.0 and social media technology. However, cloud computing and service-oriented architecture always need a special technology department to build them. The cat café is an SME; thus, it is impossible to own a technology team. On the contrary, Nike has a large technology team. More specifically, the Nike technology team is creating a scalable next-generation data center cloud using Juniper's MetaFabric architecture. Also, the team built the Virtual Retail Wall using the Microsoft.NET Framework 3.0, Windows® Communication Foundation and Windows Presentation Foundation [50]. The Virtual Retail Wall is the application of service-oriented architecture (SOA).

Management, through different social channels, the café effectively handles a high demand of customer queries and has built strong relationships with customers. Furthermore, Lady Dinah's Cat Emporium has strict rules for booking. For instance, there is an age limit of 12 years and over only and a limit of 3 children per booking. To keep their cats' safe from disease, the Emporium has strict contagion management protocols such as washing hands in a special sanitation room before entering. The café also protects customers' privacy by encrypting any payment transactions and their personal data.

Nike recognizes how important customer relationship is, especially on s-commerce. Thus, Nike created a separate Twitter account just for responding to customer inquiries and issues: @NikeSupport. NikeSupport is dedicated to customer relationship management, making it easier for customers to reach out when they have a problem or a question they want to be answered. If customers look at the account's Twitter feed, they will see replies every few minutes (Site 12). Another method to keep customer relationship is holding Nike social events, which support relationship maintenance with customers by providing social events. For usage risk management, to offset the risk associated with its exposure to foreign currency fluctuations, Nike applies risk management and hedging policy [51].

4.3.4 Negative Case Analysis for Context

Negative case analysis, used by Lincoln and Guba (1985), helps improve the rigor credibility of the study; the use of conflicting findings builds a richer picture of the phenomenon and allows for continuous refinement of the results [44]. We added the s-commerce failure case from the J.M. Smucker company as our negative case.

The J.M. Smucker company, best known for its jams and jellies, received a great deal of flak for labeling packaged foods containing certain ingredients as *genetically engineered* and many people turned to its Facebook page to complain. In response, Smucker tried to control the situation by deleting the comments, which made the situation far worse. As a result, consumers boycotted the company's products (Site 13).

Context, the newly added component in our s-commerce framework, includes macroscopic facets (economic, legal/political, social and environmental factors, as well as spatial and time dimensions), which have been neglected by scholars. To emphasize the important influence of Context, we added Smucker's Facebook scandal to compare with the other two successful companies (Cat café and Nike). The detailed discussion is shown in Table 7.

Table 7: Context design features of the three companies

Design features	Cat café	Nike	J.M. Smucker (Facebook Scandal)
Economic factors	Asset: from £54,849 (2014) to £100,629 (2016)	Gross profit: In millions from \$12,446 (2014) to \$14,971(2016)	Gross profit: In millions from \$ 2,031.0 (2014) to \$ 1,968.7 (2015)
Social factors	Animal love and leisure	Health concerns and fashion	A flurry of negative attention
Spatial dimension:	London	Around the world	North America
Time dimension:	Opened since 2014	Founded in 1964	The scandal has real long-time influence
Environmental factors	Little influence	Reduction of carbon emissions and elimination of waste	Genetically engineered ingredients
Legal/Political factors	Employment law Animal protection laws Consumer law	Employment law Consumer law Health and safety regulations	Genetically modified organisms (GMOs) legislation

Smucker's Facebook scandal: (1) Economic: An economic slowdown presents a significant challenge to business performance. In mid-November 2014, Smucker began deleting any fan posts to their Facebook page that criticized the company's stance on GMO labeling. As a result, this action negatively influenced Smucker's business development. From their annual reports, we found the gross profit in 2015 (\$ 1,968.7 in millions) is smaller than that of 2014 (\$ 2,031.0 in millions) [67] (2) Social: Public relations have never been more relevant than today. Smucker appears to have scared off its most dedicated fans. In January of 2015, two months after the scandal, the page received 169 comments. This is a 78% decrease from the same period in 2014, when the page received 795 comments (Site 14). (3) Spatial: It seems that deleting fan posts so publicly has discouraged its consumers all over the world (most are from North America). (4) Time: The scandal has a real long-time influence (not exactly sure how long). (5) Environmental: Environmental issues are of ever-growing importance. Smucker's packaged foods contain certain genetic engineering ingredients, which has triggered the ecological balance issue. (6) Legal/Political: Corporate growth strategies must always be based on legal and policy considerations in all business functional areas. Therefore, Smucker should follow GMO regulations.

Cat café: (1) Economic: The asset of the cat café has doubled between 2014 (£54,849) and 2016 (£100,629) (Site 15). (2) Social: A good social image means a great deal for modern corporations. Lady Dinah's Cat Emporium was

inspired by the social background of love for cats. (3) Spatial: It is London's first ever cat café. (4) Time: The café opened in 2014. (5) Environmental: As an SME, Lady Dinah's Cat Emporium has little influence on the environment. (6) Legal/Political: Employment, consumer and trade laws are important to Cat Emporium. Especially, it needs to pay attention to animal protection laws.

Nike, (1) Economic: Investments in consumer engagement that drives financial returns in the form of increased revenue and gross profit; the return on invested capital has increased from 22.6% in 2014 to 29.7% in 2016 (Site 16). (2) Social: Nike has been a beneficiary of a growing social preoccupation with fitness and well-being. (3) Spatial: Nike is the worldwide sport brand. (4) Time: The company was founded on January 25, 1964, as Blue Ribbon Sports, and officially became Nike, Inc. on May 30, 1971. (5) Environmental: With regard to ISO 14000, Nike appointed 100 'sustainability champions' to oversee pilot projects in its various business areas, such as the reduction of carbon emissions and elimination of waste (Site 17). (6) Legal/Political: Political factors are especially important to the backend of a company. For example, the United States, Nike's 'home country' so to speak, has favorable factors (low-interest rates and well-arranged international tax agreements), which are especially valuable for the growth of the company.

The comparative analysis of these s-commerce websites indicated that our proposed design framework, comprised of four components each addressing a number of design features, is very comprehensive of s-commerce features and generalizable as it can be used by all types of organizations. Although it is not necessary to achieve all design features within each component, s-commerce design features should cover all the components. In other words, the minimum set of features for s-commerce design should include features from the customer, merchant, platform and context components.

5 Discussion

Based on our framework and its practical applications, we firstly offer metrics that may prove valuable for developing start-ups to be involved in s-commerce and for redesigning companies' s-commerce frameworks. Then, based on the framework and the metrics, we derive managerial implications, discuss limitations of this study and suggest future research needs.

5.1 Metrics

In research as well as business, a metric is a measuring system that quantifies a trend, dynamics, or characteristics [19]. S-commerce brings together social promotion and transactions into a single, unified experience, which breaks the old rules of e-commerce and thus demands new metrics. As such, we provide metrics corresponding to the four components in our framework, which should help organizations to avoid some often-observed pitfalls and enable managers to successfully navigate their s-commerce efforts [55].

5.1.1 Metrics for Customer

In order to build a sustained and authentic framework, we should develop and employ adequate metrics to measure consumers' heterogeneity and evolution in the s-commerce environment as follows.

Bi-directional communication, Previously, pure inside-out communication was the general pattern. However, today companies need to build metrics that enable listening and responding to customers. First, listen to customers and understand their needs. Then, respond directly and quickly to customize their experiences.

Social media monitoring, Firms need metrics that can not only listen and respond at the individual consumer level, but also to the noise across social systems. Social media monitoring is a key metric for managing effective online programs. Creating a contingency plan is what any business should have in place as this helps ease the response time in defusing a troubling situation.

Consulting, Consumers are apt to consult with a diverse group of people to inform themselves about different risks. When perceiving any physical risk, consumers tend to consult with experts who have the knowledge in a particular product category. When considering a psychological risk, it is possible that consumers turn for the advice of social opinion leaders who can judge if the purchase will conform to the norms and tastes of an in-group. Finally, when perceiving any financial risk, it is likely that consumers turn to market mavens who have a broad understanding of options and alternatives in the marketplace. Thus, we propose to arrange experts, social opinion leaders, and market mavens in different situations. Experts are often found to be active in specialized communities, maintain blogs or create videos to share their knowledge. Social opinion leaders usually engage in consumers' in-groups on networks such as Facebook, Twitter and Pinterest. Market mavens have been found in discussion forums, review and rating platforms [73].

5.1.2 Metrics for Merchant

The second component Merchant, suggesting heterogeneity across types of products and services, is consistent with emerging evidence pertaining to the framework.

Products/services description, to promote products/services on social sites, it is critical that the firm provides descriptions that match consumer intent. Using words that consumers understand and use to describe an offering is a way to ensure increased visibility within social site algorithms for search results and feed curation, and to appeal to consumers directly.

Products/services number, despite the success of product/service-based content on s-commerce sites, the July 2014 DataPop & Kenshoo s-commerce Index found that retailers are only posting 7.2% of their top selling products/services on social sites [35]. To be more discoverable, firms should continue to post products/services on social sites.

Social sites providers, While product/service posts with rich information correspond to higher engagement, the analysis found that 60% of product/service Pins are not opted into Rich Pins [35]. Taking advantage of this feature could be a quick way to boost engagement and sales volumes driven by Pinterest. Companies should also add the Pinterest, Polyvore, and Wanelo buttons to the product/service pages on their websites, encouraging consumers to post and spread the word about products/services.

5.1.3 Metrics for Platform

Metrics for Activities, these social-related exchange activities may also have different characteristics that require different metrics in the framework.

Carefulness, Dozens of social-related exchange activities happen every day, and new ones are appearing on the horizon. If firms still need time to run core business, they simply cannot participate in them all. Choosing the right medium for any given purpose depends on the target group to be reached and the message to be communicated [34].

Integration, It is crucial to ensure that social-related exchange activities are all aligned with each other. Using different contact channels can be a worthwhile and profitable strategy. However, different channels should be integrated with each other.

Metrics for Information, Social networking sites (SNS) provide consumers with the opportunity to be regularly informed about the products/services liked or pinned and the places visited by their friends. Thus, social signals act as sources of informational influence. We afford a set of metrics for information in the social networking sites.

Be active, S-commerce is all about sharing and interaction, so ensure that the content is always fresh and always engage in discussions with customers [34].

Be attractive, The first step is to listen to customers. Find out what they would like to hear; what they would like to talk about; what they might feel interesting, enjoyable, and valuable. Then, develop and post contents that fit those expectations.

Be authentic, Be honest and respect the rules of the game. Companies should distribute reliable information and win customers' trust. It's crucial to bank on authenticity and avoid fake reviews.

Metrics for Technology, *Buy or make*: Once the technology to be used is decided, the next decision step involves whether to make or buy. In some cases, it might just be best to join an existing technology and benefit from its popularity and user base. But in some cases, the right technology might not be available yet and the firm should make its own. Whatever the ultimate decision-to buy, make, or both- it is vital that there is an understanding of the basic idea behind the technology. It is all about participation, sharing, and collaboration, rather than straightforward advertising and selling [34].

Be modest, Never forget that technology existed before your firm decided to apply it.

Metrics for Management, Managers should be aware that everything they do in terms of customer relationship, quality control, usage risk of s-commerce is often transparent in the social network. For example, it should be clear to present privacy notices as well as terms and conditions of use in the firm's official websites.

5.1.4 Metrics for Context

We are tracking a new set of metrics that measure s-commerce success in terms of Context. The new social metrics include social connections like fans (or likes) and followers, engagement rates, social chatter, media equivalent value and dollars per share, etc. We present these metrics in Table 8.

5.2 Implication

Our proposed s-commerce framework and its application and metrics will help managers to modify their marketing strategies: Social media monitoring is critical for firms to apply the s-commerce framework. We suggest using proprietary social analytics tools (such as semantic technology) to analyze social posts. For example, Polyvore, Wanelo and Pinterest are all working on enhancing their analytics suites; or outsourcing to some companies that offer social analytics services (e.g. Smync and Revionics).

Table 8: Metrics for context

Metrics	Explanation
Social connections	SNS followers such as Facebook fans and Twitter followers.
Engagement rate	The total of likes and comments divided by a total fan count.
Social clicks	How many clicks for each post (what category of posts drives the most clicks).
Socially-referred site traffic	How much traffic (from links across the web, social media, in trackable email, promotion & branding campaign links) the site gets from all the posting, tweeting, and videos, etc.
Socially-referred revenue	E-commerce revenue can be sourced to social media.
Media equivalent value	The monetary equivalent of the impressions generated through social media.
Dollars per share	The average value of the additional tickets sold through this share.
Visits per share	The amount of additional traffic generated by each act of sharing.

Many companies learn the hard way that fake reviews (such as hiring people to write good reviews and deleting negative comments like Smucker’s Facebook scandal) can damage their reputation and consumer confidence in the review process. Several startups have emerged with the goal of guaranteeing honest reviews, better sales and improved engagement. Gathering reviews directly through a service allows companies to show customers that the review process is honest and purchases are verified, solving two major issues. Gradually, confidence in reviews can be re-established (Site 18).

Once a social post reaches a consumer, images and videos play critical roles in capturing the consumer’s attention. In order to inspire users to engage, modify and then share the post, and also develop reward systems. Whether comments are good or bad, companies should reward customers’ feedback (materially or spiritually or both).

For most companies, s-commerce represents a new channel, with much to learn and master. Firms can use the proposed framework design to develop a platform that enables an effective s-commerce, not only in terms of extending the existing social websites, but also in terms of changing the way of doing business with a focus on social interactions. Thus, companies should create multi s-commerce channels and a good community atmosphere to encourage customers to participate in the co-innovative business experience. Also, companies should consider changing their social media use strategies from simply advertising or viral marketing of their products/services to providing effective s-commerce platforms (Activities, Information, Management and Technology). Such efforts will help enhance customer engagement and experiences, in all stages of product life cycle, from the design to retiring a product.

5.3 Limitations and Future Research Needs

Since this study is preparing a new s-commerce framework, its applications, and new metrics for design, it has some limitations. First, this framework focuses only on customers and merchants. In reality, the actors in s-commerce are diverse, such as employees, customers, partners, suppliers, and even competitors. Researchers can shift the organization's perspective on s-commerce from outward-looking to inward-looking: e.g., developing a similar framework to guide employees (such as training on usage of s-commerce; signing a code of conduct policy documents and security related or information use agreements).

Second, we only analyzed three companies in this research. The framework can be used for an empirical study of a diverse type of firms to further investigate the effect and the relationship between s-commerce and unique organizational characteristics such as industry type, size, organizational and national culture, etc. For example, a study can compare the pre- and post- framework application results in one company (horizontal analysis) to identify the framework’s strengths and weaknesses.

Third, there is an increasing awareness that social networking site (SNS) use includes a positive and a negative side. However, many s-commerce studies have only focused on positive aspects (such as information sharing and positive socio-psychologically effects) and ignored negative ones. Interpersonal influence in social networks can incur a negative outcome. Therefore, we need to explore what other theories could add to our understanding of the s-commerce phenomena. For instance, Dark Triad [22], exhibitionism and voyeurism [45], social comparison and jealousy [21] should be explained.

Fourth, technology is certainly a major driver supporting s-commerce. However, little research has investigated how websites should be effectively designed to support C2C transactions [66]. Additionally, few studies have focused on the updated status of semantic content technology for s-commerce. Thus, research should identify and develop the technological tools that support C2C payments and semantic content technology such as Latent Semantic Analysis (LSA) [22]. These limitations of the study offer many new future research opportunities.

6 Conclusion

S-commerce is rapidly developing with enormous economic and social impacts. Organizations of all sizes and types are rushing to leverage social media into their business. There is a need for designing an effective framework to guide and help them incorporate social media into their online business. Very few firms have implemented effective s-commerce [31] because there is a lack of a comprehensive framework to shape s-commerce as an important business process. As a matter of fact, very few studies have focused on s-commerce from the perspectives of modeling and framework design [5], [31], [72]. This study fills this gap by proposing a comprehensive framework with important criteria to guide s-commerce design.

In this study, we combined the cross-case synthesis technique and the negative case analysis approach to test the applicability, robustness, and the generality of the proposed framework by applying it to three different firms, Lady Dinah's Cat Emporium, Nike and Smucker. Then, the metrics are developed for the four components of the framework to guide scholars and practitioners to develop a more comprehensive understanding of the potential of s-commerce. This study makes a contribution to s-commerce research as it is the first study that builds a comprehensive, multi-perspective/layer framework to design and assess s-commerce. Researchers can use this framework as a reference model to further explore and refine a social-interaction enabled business model to expand the scope of s-commerce.

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Websites List

Site 1: Statistic

<https://www.statista.com/statistics/503514/worldwide-enterprise-social-networks-revenue/>

Site 2: Lady Dinah's Cat Emporium

<http://ladydinahs.com/?ref=driverlayer.com>

Site 3: Eurostat

<http://ec.europa.eu/eurostat/web/structural-business-statistics/structural-business-statistics/sme>

Site 4: Nike

https://www.nike.com/es/es_es/

Site 5: 5 SMEs That Are Winning at Social Media Marketing and What You Can Learn From Them

<https://buildfire.com/smes-winning-social-media-marketing-learn/>

Site 6: How Nike uses Facebook, Twitter, Pinterest and Google+

<https://econsultancy.com/blog/62412-how-nike-uses-facebook-twitter-pinterest-and-google/>

Site 7: The success of London's first cat café

<http://www.thisismoney.co.uk/money/smallbusiness/article-3561871/Lauren-Pears-success-London-s-cat-caf.html>

Site 8: Nike Football: World Cup 2010 South Africa

<http://www.hbs.edu/faculty/Pages/item.aspx?num=40531>

Site 9: Lady Dinah's one of 2014's new businesses!

<http://www.yourcat.co.uk/Your-Cat/lady-dinah-s-one-of-2014-s-top-new-businesses.html>

Site 10: Social Commerce

<http://www.socialmediatoday.com/content/social-commerce>

Site 11: What sports brands have utilized user generated content?

<https://www.quora.com/What-sports-brands-have-utilized-user-generated-content>

Site 12: 10 Companies That Totally Rock Customer Service on Social Media
<http://www.businessnewsdaily.com/7578-social-media-customer-service.html>

Site 13: The Smucker's Facebook Fail
<http://www.cmswire.com/cms/customer-experience/the-smuckers-facebook-fail-how-to-protect-your-brand-027083.php#null>

Site 14: Crisis Management 101
<https://www.crowdbabble.com/blog/social-media-crisis-management-101-how-smuckers-facebook-scandal-may-have-helped-its-brand/>

Site 15: Lady Dinah's Cat Emporium
<http://www.bizstats.co.uk/ltd/lady-dinahs-cat-emporium-east-ltd-08477591/>

Site 16: Nike Annual Report
http://s1.q4cdn.com/806093406/files/doc_financials/2016/ar/index.html

Site 17: UK Essays
<https://www.ukessays.com/essays/business/pestle-analysis-of-nike-macro-environmental-factors-business-essay.php>

Site 18: Marketing Land
<http://marketingland.com/fake-online-reviews-killing-consumer-confidence-194239>

References

- [1] H.H. Alshibly, Customer perceived value in social commerce: An exploration of its antecedents and consequences, *Journal of Management Research*, vol. 7, no. 1, pp. 17-37, 2015.
- [2] N. Amblee and T. Bui, Harnessing the influence of social proof in online shopping: The effect of electronic word of mouth on sales of digital microproducts, *International Journal of Electronic Commerce*, vol. 16, no. 2, pp. 91-114, 2011.
- [3] A. Animesh, A. Pinsonneault, S. B. Yang, and W. Oh, An odyssey into virtual worlds: Exploring the impacts of technological and spatial environments on intention to purchase virtual products, *MIS Quarterly*, vol. 35, no. 3, pp. 789-810, 2011.
- [4] Y. Baghdadi, From e-commerce to social commerce: A framework to guide enabling cloud computing, *Journal of Theoretical and Applied Electronic Commerce Research*, vol. 8, no. 3, pp. 12-38, 2013.
- [5] Y. Baghdadi, A framework for social commerce design, *Information Systems*, vol. 60, pp. 95-113, 2016.
- [6] Y. Calvin, Y. Yang, Z. Cheng, and J. Lim, Systems retaining and attracting users in social networking services: An empirical investigation of cyber migration, *Journal of Strategic Information Systems*, vol. 23, no. 3, pp. 239-253, 2014.
- [7] J. Chen, X. L. Shen and Z. J. Chen, Understanding social commerce intention: A relational view, in *Proceedings Annual Hawaii International Conference on System Sciences*, Hawaii, 2014, pp. 1793-1802.
- [8] C. M. K. Cheung, B. S. Xiao and I. L. B. Liu, Do actions speak louder than voices? The signaling role of social information cues in influencing consumer purchase decisions, *Decision Support Systems*, vol. 65, pp. 50-58, 2014.
- [9] M. Chevalier, A. Dattolo, G. Hubert, and E. Pitassi, Information retrieval and folksonomies together for recommender systems, in *Proceedings International Conference on Electronic Commerce and Web Technologies*, Toulouse, 2011, pp. 172-183.
- [10] J. Cho, S. Jung, H. Kang, S. Kim, and S. R. Mtiana, A framework of social curation system based on collaborative filtering, *International Journal of Advancements in Computing Technology*, vol. 5, no. 13, pp. 355-360, 2013.
- [11] E. Constantinides and S. J. Fountain, Web 2.0: Conceptual foundations and marketing issues, *Journal of Direct, Data and Digital Marketing Practice*, vol. 9, no. 3, pp. 231-244, 2008.
- [12] E. Constantinides, C. L. Romero and M. a. G. Boria, Social media: A new frontier for retailers?, *European Retail Research*, vol. 22, pp. 1-28, 2009.
- [13] A. A. Costa and L. V. Tavares, Social e-business and the satellite network model: Innovative concepts to improve collaboration in construction, *Automation in Construction*, vol. 22, pp. 387-397, 2012.
- [14] R. G. Curty and P. Zhang, Social commerce: Looking back and forward, in *Proceedings of the American Society for Information Science and Technology (ASIST) Annual Conference*, New Orleans, 2011, pp. 1-10.
- [15] R. G. Curty and P. Zhang, Website features that gave rise to social commerce: A historical analysis, *Electronic Commerce Research and Applications*, vol. 12, no. 4, pp. 260-279, 2013.
- [16] G. Dennison, S. Bourdage-Braun and M. Chetuparambi, *Social Commerce Defined*, IBM Corporation, USA, Technical Report P23747, 2009.

- [17] L. Esmaeili, M. Mutallebi, S. Mardani, and S. A. H. Golpayegani, Studying the affecting factors on trust in social commerce, *International Journal of advanced studies in Computer Science and Engineering*, vol. 4, no. 6, pp. 41-47, 2015.
- [18] European Union, Commission, Official Journal of the European Union, vol. 124, no. 36, pp. 36-41, 2003.
- [19] P.W. Farris, N.T. Bendle, P.E. Pfeifer, and D.J. Reibstein, *Marketing Metrics: 50+ Metrics Every Executive Should Master*. Bergen County: Pearson Prentice Hall, 2006.
- [20] M. S. Featherman and N. Hajli, Self-service technologies and e-services risks in social commerce era, *Journal of Business Ethics*, vol. 139, no. 2, pp. 1-19, 2015.
- [21] J. Fox and J.J. Morel, The dark side of social networking sites: An exploration of the relational and psychological stressors associated with Facebook use and affordances, *Computers in Human Behavior*, vol. 45, pp. 168-176, 2015.
- [22] D. Garcia and S. Sikström, The dark side of facebook: Semantic representations of status updates predict the dark triad of personality, *Personality and Individual Differences*, vol. 67, pp. 92-96, 2014.
- [23] R. Gatautis and A. Medziausiene, Factors affecting social commerce acceptance in Lithuania, *Procedia - Social and Behavioral Sciences*, vol. 110, pp. 1235-1242, 2014.
- [24] M. Hajli, A research framework for social commerce adoption, *Information Management & Computer Security*, vol. 21, no. 3, pp. 144-154, 2013.
- [25] M.N. Hajli, The role of social support on relationship quality and social commerce, *Technological Forecasting and Social Change*, vol. 87, pp. 17-27, 2014.
- [26] N. Hajli, Social commerce constructs and consumer's intention to buy, *International Journal of Information Management*, vol. 35, no. 2, pp. 183-191, 2015.
- [27] N. Hajli, X. Lin, M. Featherman and Y. Wang, Social word of mouth how trust develops in the market, *International Journal of Market Research*, vol. 56, no. 5, pp. 1-17, 2014.
- [28] N. Hajli, M. Shanmugam, P. Powell, and P. E. D. Love, A study on the continuance participation in on-line communities with social commerce perspective, *Technological Forecasting and Social Change*, vol. 96, pp. 232-241, 2015.
- [29] S. Hassan, J. Toland and M. Tate, From blogosphere to social commerce: A laddering analysis of sellers' motivation, in *Proceedings of Annual Hawaii International Conference on System Sciences*, Hawaii, 2016, pp. 2146-2155.
- [30] K. L. Hsiao, J. C. C. Lin, X. Y. Wang, H. P. Lu, and H. Yu, Antecedents and consequences of trust in online product recommendations: An empirical study in social shopping, *Online Information Review*, vol. 34, no. 6, pp. 935-953, 2010.
- [31] Z. Huang and M. Benyoucef, From e-commerce to social commerce: A close look at design features, *Electronic Commerce Research and Applications*, vol. 12, no. 4, pp. 246-259, 2013.
- [32] Z. Huang and M. Benyoucef, User-centered investigation of social commerce design, in *Proceedings International Conference on Online Communities and Social Computing*, Springer Berlin Heidelberg, 2013, pp. 287-295.
- [33] Z. Huang and M. Benyoucef, User preferences of social features on social commerce websites: An empirical study, *Technological Forecasting and Social Change*, vol. 95, pp. 57-72, 2014.
- [34] A.M. Kaplan and M. Haenlein, Users of the world, unite! The challenges and opportunities of social media, *Business Horizons*, vol. 53, no. 1, pp. 59-68, 2010.
- [35] Kenshoo, *Social Commerce Index Second Report*, 2014, pp. 1-7.
- [36] S. Kim and H. Park, Effects of various characteristics of social commerce (s-commerce) on consumers' trust and trust performance, *International Journal of Information Management*, vol. 33, no. 2, pp. 318-332, 2013.
- [37] D.M. Kroenke, *Using MIS (7th Edition)*. New Jersey: Pearson Prentice Hall, 2011.
- [38] I.E. Kucukcay, *A Design Framework for Mobile Social Commerce*, M.S. thesis, University of Ottawa, 2014.
- [39] J. Lee, M. S. Cha and C. Cho, Online service quality in social commerce websites, in *Contemporary Research on E-business Technology and Strategy (V. Khachidze, T. Wang, S. Siddiqui, V. Liu, S. Cappuccio, and A. Lim Eds.)*. Tianjin: Springer Berlin Heidelberg, 2012, pp. 335-351.
- [40] P. Leitner and T. Grechenig, Scalable social software services: Towards a shopping community model based on analyses of established web service components and functions, in *Proceedings Annual Hawaii International Conference on System Sciences*, Hawaii, 2009, pp. 1-10.
- [41] Y. M. Li, C. L. Chou and L. F. Lin, A social recommender mechanism for location-based group commerce, *Information Sciences*, vol. 274, pp. 125-142, 2014.
- [42] T. P. Liang, Y. T. Ho, Y. W. Li, and E. Turban, what drives social commerce: The role of social support and relationship quality, *International Journal of Electronic Commerce*, vol. 16, no. 2, pp. 69-90, 2011.
- [43] T. P. Liang and E. Turban, Introduction to the special issue social commerce: A research framework for social commerce, *International Journal of Electronic Commerce*, vol. 16, no. 2, pp. 5-14, 2011.
- [44] Y.S. Lincoln and E.G. Guba, *Naturalistic Inquiry*. Thousand Oaks: Sage Publications, 1985.
- [45] M. Mantymaki and A.K.M.N. Islam, The janus face of facebook: Positive and negative sides of social networking site use, *Computers in Human Behavior*, vol.61, pp. 14-26, 2016.
- [46] P. Marsden, *Social Commerce: Monetizing Social Media*. UK: Syzygy Group, 2010.
- [47] P. Marsden and P. Chaney, *The Social Commerce Handbook: 20 Secrets for Turning Social Media into Social Sales*. New York: McGraw-Hill, 2012.
- [48] P. Mell and T. Grance, *The NIST definition of cloud computing*, National Institute of Standards and Technology Special Publication, Report MD 20899-8930, 2011.

- [49] C.S.P. Ng, Intention to purchase on social commerce websites across cultures: A cross-regional study, *Information and Management*, vol. 50, no. 8, pp. 609-620, 2013.
- [50] Nike demonstrates power of web services to help secure technological innovation, Microsoft, 2007, pp. 1-5.
- [51] Nike' s Risk Management and Derivative Usage, Nike, 2008, pp. 1-2.
- [52] D. Noor, R. Sulaiman, and A. A. Bakar, A review of factors that influenced online trust in social commerce, in *Proceedings International Conference on Information Technology and Multimedia (ICIMU)*, Putrajaya, 2014, pp. 118-123.
- [53] M. Pagani and A. Mirabello, The influence of personal and social- interactive engagement in social TV web sites, *International Journal of Electronic Commerce*, vol. 16, no. 2, pp. 41-68, 2011.
- [54] S. Park and Y. Kang, What' s going on in SNS and social commerce?: Qualitative approaches to narcissism, impression management, and e-WOM behavior of consumers, *Journal of Global Scholars of Marketing Science*, vol. 23, no. 4, pp. 460-472, 2013.
- [55] K. Peters, Y. Chen, A.M. Kaplan, B. Ognibeni, and K. Pauwels, Social media metrics - A framework and guidelines for managing social media, *Journal of Interactive Marketing*, vol. 27, no. 4, pp. 281-298, 2013.
- [56] M. J. Piskorski and R. Johnson, Social strategy at Nike, Harvard Business School, Boston, USA, Report 712-484, 2014.
- [57] E. Pöyry, P. Parvinen and T. Malmivaara, Can we get from liking to buying? Behavioral differences in hedonic and utilitarian facebook usage, *Electronic Commerce Research and Applications*, vol. 12, no. 4, pp. 224-235, 2013.
- [58] A. A. Rad and M. Benyoucef, A model for understanding social commerce, in *Proceedings Conference on Information Systems Applied Research*, Nashville Tennessee, 2010, pp. 1-11.
- [59] D. Ronca, A. Calvanese and C. Birtolo, A flexible framework for context-aware recommendations in the social commerce domain, in *Proceedings of the Joint EDBT/ICDT 2013 Workshops*, Genoa, 2013, pp. 105-110.
- [60] M. Shadkam and J. O'Hara, Social commerce dimensions: The potential leverage for marketers, *Journal of Internet Banking and Commerce*, vol. 18, no. 1, pp. 1-11, 2013.
- [61] M. Shanmugam and Y. Y. Jusoh, Social commerce from the information systems perspective: A systematic literature review, in *Proceedings International Conference on Computer and Information Sciences (ICCOINS)*, Kuala Lumpur, 2014, pp. 1-6.
- [62] B. Shen, D. Liu, and L. Tai, Customer information sharing in social commerce based on FIRE model: The role of trust propensity, in *Proceedings International Conference on Management of e-Commerce and e-Government Customer*, Shanghai, 2014, pp. 119-123.
- [63] J. Shen, Social comparison, social presence, and enjoyment in the acceptance of social shopping websites, *Journal of Electronic Commerce Research*, vol. 13, pp. 198-212, 2012.
- [64] D. Shin, User experience in social commerce: In friends we trust, *Behaviour & Information Technology*, vol. 32, no. 1, pp. 52-67, 2013.
- [65] M.M. Shin and C. Park, Internet addiction as a manageable resource: A focus on social network services, *Online Information Review*, vol. 37, no. 1, pp. 28-41, 2013.
- [66] M. Sigala, Collaborative commerce in tourism: Implications for research and industry, *Current Issues in Tourism*, vol. 20, no. 4, pp. 346-355, 2015.
- [67] E. J. Comstock, Annual Report, Nick Inc, Washington, D.C., USA, Report 1-10635, 2016.
- [68] T. Stephen and O. Toubia, Deriving Value from social commerce networks, *Journal of Marketing Research*, vol. 47, no. 2, pp. 215-228, 2010.
- [69] E. Turban, N. Bolloju and T. Liang, Social commerce: An e-commerce perspective, in *Proceedings International Conference on Electronic Commerce: Roadmap for the Future of Electronic Business (ICEC 2010)*, Honolulu, 2010, pp. 33-42.
- [70] Y. Wan, The Matthew effect in social commerce, *Electronic Markets*, vol. 25, no. 4, pp. 313-324, 2015.
- [71] C. Wang and P. Zhang, The evolution of social commerce: The people, management, technology, and information dimensions, *Communication of the Association for Information Systems*, vol. 31, no. 5, pp. 105-127, 2012.
- [72] J. Wu, M. Xu, Z. Mo, and L. Liao, The research of design based on social commerce, *International Journal of Social Science Studies*, vol. 3, no. 4, pp. 157-165, 2015.
- [73] M. S. Yadav, K. de Valck, T. Hennig-Thurau, D. L. Hoffman, and M. Spann, Social commerce: A contingency framework for assessing marketing potential, *Journal of Interactive Marketing*, vol. 27, no. 4, pp. 311-323, 2013.
- [74] S. Yang, Y. Liu and J. Wei, Social capital on mobile SNS addiction A perspective from online and offline channel integrations, *Internet Research*, vol. 26, no. 4, pp. 982-1000, 2016.
- [75] R.K. Yin, *Case Study Research: Design and Methods (5th Edition)*. Washington, DC: Sage Publications, 2013.
- [76] Z. Yun, Testing a theoretical model to examine the relationships among e-social shopping motivation, perception, and behavioral intention, Ph.D. dissertation, Michigan State University, East Lansing, MI, 2011.
- [77] K. Z. Zhang and M. Benyoucef, Consumer behavior in social commerce: A literature review, *Decision Support Systems*, vol. 86, pp. 95-108, 2016.
- [78] P. Zhang and R. I. Benjamin, Understanding information related fields: A conceptual framework, *Journal of the American Society for Information Science and Technology*, vol. 58, no. 13, pp. 1934-1947, 2007.
- [79] L. Zhou, P. Zhang and H. D. Zimmermann, Social commerce research: An integrated view, *Electronic Commerce Research and Applications*, vol. 12, no. 2, pp. 61-68, 2013.

Appendix A: Definitions of S-Commerce

Authors	Actual definition of s-commerce in each reference
[16]	The concept of word-of-mouth, applied to e-commerce.
[30]	A new e-commerce method combining social networking with shopping.
[46]	As a subset of e-commerce using social media to facilitate social interactions and enhance the online shopping experience.
[58]	Refers to both networks of sellers and networks of buyers; it is the evolution of e-commerce which is based on one-to-one interactions, into a more social and interactive form of e-commerce.
[68]	Forms of Internet-based <i>social media</i> that allow people to actively participate in the marketing and selling of products and services in online marketplaces and communities.
[43]	Using Web 2.0 social media technologies to support online interactions and user contributions to assist in the acquisition of products and services.
[13]	Enhance collaboration and trust relationships in e-business, integrating and adapting common social network collaborative tools and emphasizing the role of SCM in e-business.
[47]	The fusion of social media with e-commerce, or in the words of IBM, social commerce is basically the concept of word-of-mouth applied to e-commerce. More fully, social commerce is a subset of electronic commerce that uses social media, online media that supports social interaction and user contributions, to enhance the online purchase experience.
[63]	A technology-enabled shopping experience where online customer interactions while shopping provides the main mechanism for conducting social shopping activities.
[71]	As a form of commerce that is mediated by social media and is converging both online and offline environments.
[4]	As doing commerce in a collaborative and participative way by using social media through an enterprise interactive interface.
[31]	An Internet-based commercial application, leveraging social media and Web 2.0 technologies which support social interaction and user generated content in order to assist customers in their decision-making and acquisition of products and services within online marketplaces and communities
[36]	A new business model of e-commerce driven by social media (e.g., SNSs) that facilitates the purchasing and selling of various products and services
[49]	The online buying and selling activities initiated via social media, which entails business transactions through either social media (e.g., on a Facebook store) or other e-commerce sites.
[64]	Limited to a Web platform that connects users to other people online and leverages those connected networks for business, education, and services by facilitating customer interactions and participation in ways that will result in measurable results.
[73]	Refers to exchange-related activities that occur in, or are influenced by, an individual's social network in computer-mediated social environments, where the activities correspond to the need recognition, pre-purchase, purchase, and post-purchase stages of a focal exchange.
[7]	As business and commercial activities, which exploit social media to support social interactions and promote user contributions in assisting online transactions.
[23]	The integration of social networking capability into e-commerce sites, which include, but are not limited to, product reviews, rating, videos, blogging, live chats and online forums. It involves using social media, online media that support social interaction, and user contributions to assist in the online buying and selling of products and services
[17]	As an Internet-based commercial application that makes use of web 2.0 technologies and social media, and it supports user-created content and social interactions.
[5]	As a new way of doing commerce in a collaborative and participative way, involving interactions among all the actors of the value chain.
[29]	An online selling and buying activities using social media technologies and/or platforms.

Appendix B: Activities of S-Commerce

Design components	Design features	Explanations	References
Social-related exchange Activities	Recommendation	Using social media to get and make recommendations on what to buy, read, eat, see and do	[24], [30], [59]
	Referrals	Provide some material and non-material rewards (by retailers) due to customer advocacy	[4], [9], [58]
	Ratings and Reviews	Original s-commerce toolset that allows people to exchange product feedback and inform each other's choices with independent views and experiences	[2], [4], [15], [24], [26], [53], [58], [73]
	Forums and Communities	Develop and invite customers to share their information and experiences about a product or service (an example of online forums and communities can be a company's Facebook page)	[9], [24], [27], [52], [58], [64], [69], [73]
	Social ads	Place advertisements in social media platforms	[31], [46]
	Social applications	Groups of online applications or widgets offered by social media, such as Wikipedia	[12]
	Electronic word-of-mouth	Opinions that customers share online about products, services, brands, or companies (e.g., epinion)	[2], [8]
	Crowdsourcing/Crowdfunding	Process of obtaining needed services, ideas, or content by soliciting contributions from a large group of people, especially an online community	[14], [38], [40], [70]-[72]
	Co-browsing/shopping/creation	Quickly invite friends to browse, shop and design along in real-time through an interactive platform	[69]
	Group-buying	Offering products and services at significantly reduced prices when a minimum number of buyers would make the purchase (e.g., Groupon)	[41], [69]
	Tagging	Content categorization by users' tagging (i.e., short description that facilitates searching)	[9]
	Social curation	Combining social features such as sharing, liking, following, and commenting, with the curating capabilities of bookmarking, tagging, and recommending (e.g., Pinterest)	[10]
	L-commerce	Embed GPS location services tracking for advertising, promotion and other business purposes	[41]
	M-commerce	Deployment of mobile and smart technologies for enabling purchasing	[38]
	Wish lists	Enabling customers to create list of desired products, with different privacy settings, such as Listmania lists	[32]